

CLAIMS**We Claim:**

1. A process for making polypropylene, comprising the steps of:
 - a) contacting an oxygenate stream with an olefin forming catalyst to form an olefin stream;
 - b) separating an intermediate grade propylene stream from the olefin stream, wherein the intermediate grade propylene stream contains less than 99.5 wt % propylene, based on total weight of the stream;
 - c) contacting the intermediate grade propylene stream with a polypropylene forming catalyst to form polypropylene and unreacted by-product; and
 - d) removing propane from the unreacted by-product to form at least one purge stream and a propylene containing recycle stream.
2. The process of claim 1, wherein the recycle stream is contacted with polyolefin forming catalyst.
3. The process of claim 1, wherein the intermediate grade propylene stream contains less than 99 wt % propylene, based on total weight of the stream.
4. The process of claim 3, wherein the intermediate grade propylene stream contains less than 98 wt % propylene, based on total weight of the stream.
5. The process of claim 4, wherein the intermediate grade propylene stream contains less than 97 wt % propylene, based on total weight of the stream.
6. The process of claim 1, wherein the intermediate grade propylene stream contains at least 95 wt % propylene, based on total weight of the stream.

7. The process of claim 1, wherein the polypropylene forming catalyst is a Ziegler Natta or metallocene catalyst.

8. The process of claim 1, wherein the propane is removed from the unreacted by-product by distillation.

9. A process for making polypropylene, comprising the steps of:

a) separating a propylene stream and a dimethyl ether stream from an olefin stream, with the propylene stream being separated as an overhead distillation stream and the dimethyl ether stream being separated as a bottoms distillation stream;

b) recovering an intermediate grade propylene stream from the overhead stream;

c) contacting the intermediate grade propylene stream with polypropylene forming catalyst to form polypropylene and unreacted by-product;

d) recovering propylene from the unreacted by-product to form a recycle stream; and

e) contacting the recycle stream with the polypropylene forming catalyst to form additional polypropylene product.

10. The process of claim 9, wherein the intermediate grade propylene stream contains less than 99.5 wt % propylene, based on total weight of the stream.

11. The process of claim 10, wherein the intermediate grade propylene stream contains less than 99 wt % propylene, based on total weight of the stream.

12. The process of claim 11, wherein the intermediate grade propylene stream contains less than 98 wt % propylene, based on total weight of the stream.

13. The process of claim 12, wherein the intermediate grade propylene stream contains less than 97 wt % propylene, based on total weight of the stream.

14. The process of claim 11, wherein the intermediate grade propylene stream contains at least 95 wt % propylene, based on total weight of the stream.

15. The process of claim 9, wherein the polypropylene forming catalyst is a Ziegler Natta or metallocene catalyst.

16. The process of claim 9, wherein the propane is removed from the unreacted by-product by distillation.

17. A process for making polypropylene product, comprising the steps of:

a) contacting an oxygenate stream with an olefin forming catalyst to form an olefin stream, wherein the olefin stream comprises propylene, propane and dimethyl ether;

b) separating the propylene, propane and dimethyl ether from the olefin stream to obtain an intermediate grade propylene stream;

c) contacting the intermediate grade propylene stream with a polypropylene catalyst to form a polypropylene product.

18. The process of claim 17, wherein propylene is separated from the polypropylene product to form a recycle stream.

19. The process of claim 18, wherein the recycle stream is contacted with the polypropylene forming catalyst.

20. The process of claim 17, wherein the intermediate grade propylene stream contains less than 99.5 wt % propylene, based on total weight of the stream.

21. The process of claim 20, wherein the intermediate grade propylene stream contains less than 99 wt % propylene, based on total weight of the stream.

22. The process of claim 21, wherein the intermediate grade propylene stream contains less than 98 wt % propylene, based on total weight of the stream.

23. The process of claim 22, wherein the intermediate grade propylene stream contains less than 97 wt % propylene, based on total weight of the stream.

24. The process of claim 20, wherein the intermediate grade propylene stream contains at least 95 wt % propylene, based on total weight of the stream.

25. The process of claim 17, wherein the polypropylene forming catalyst is a Ziegler Natta or metallocene catalyst.

26. A process for making polypropylene product, comprising the steps of:

- a) contacting an oxygenate stream with an olefin forming catalyst to form an olefin stream;
- b) separating a propylene stream from the olefin stream;
- c) sending the propylene stream to a propylene separation system;
- d) recovering an intermediate grade propylene stream from the propylene separation system;
- e) contacting the intermediate grade propylene stream with a polypropylene forming catalyst to form a polypropylene product and unreacted propylene; and
- f) removing at least a portion of the unreacted propylene in the propylene separation system, wherein the intermediate grade propylene stream further comprises the removed portion of unreacted propylene.

27. The process of claim 26, wherein the propylene separation system includes a distillation column.

28. The process of claim 26, wherein the intermediate grade propylene stream contains less than 99.5 wt % propylene, based on total weight of the stream.

29. The process of claim 28, wherein the intermediate grade propylene stream contains less than 99 wt % propylene, based on total weight of the stream.

30. The process of claim 29, wherein the intermediate grade propylene stream contains less than 98 wt % propylene, based on total weight of the stream.

31. The process of claim 30, wherein the intermediate grade propylene stream contains less than 97 wt % propylene, based on total weight of the stream.

32. The process of claim 28, wherein the intermediate grade propylene stream contains at least 95 wt % propylene, based on total weight of the stream.

33. The process of claim 26, wherein the polypropylene forming catalyst is a Ziegler Natta or metallocene catalyst.